

REMARKS

Applicants thank the Examiner for the thorough examination given the present application.

Status of the Claims

Claims 14-26 are pending in the above-identified application and stand ready for further action on the merits. In view of the following remarks, the Examiner is respectfully requested to withdraw all rejections and allow the currently pending claims.

Examiner's Interview

Applicants would like to thank the Examiner for his time during the interview on January 30, 2009. Applicants appreciate the courtesies extended to them in this application. During the interview, the differences between the present invention and the cited prior art were discussed. Specifically, the step of "adding a base" in all of the independent claims was discussed. Upon explanation, the Examiner better understood the present invention. The Examiner stated that he previously considered the "alkali salt water solution" of JP '304 (JP 41-12304) as the base but now understands that the claims of the present invention are distinguished from JP '304. Accordingly, the Examiner recommended reasserting the arguments made in the previous Response. Applicants have done so and believe that the claims are now in condition for allowance. Should the Examiner believe that there remains any outstanding issues, Applicants respectfully request that the Examiner contact Applicants' Representative so as to expedite resolution of these outstanding issues, via an Examiner's Amendment or the like.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 14-15, 20, and 23-26 have been rejected under the provisions of 35 U.S.C. § 103(a) as being unpatentable over **JP '304**.

Claims 16-19 and 21-22 have been rejected under the provisions of 35 U.S.C. § 103(a) as being unpatentable over **JP '304**.

Applicants respectfully traverse. Reconsideration and withdrawal of these rejections are respectfully requested based on the following considerations.

Legal Standard for Determining Prima Facie Obviousness

MPEP 2141 sets forth the guidelines in determining obviousness. First, the Examiner has to take into account the factual inquiries set forth in *Graham v. John Deere*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), which has provided the controlling framework for an obviousness analysis. The four *Graham* factors are:

- (a) determining the scope and content of the prior art;
- (b) ascertaining the differences between the prior art and the claims in issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating any evidence of secondary considerations.

Graham v. John Deere, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

Second, the Examiner has to provide some rationale for determining obviousness. MPEP 2143 sets forth some rationales that were established in the recent decision of *KSR International Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). Exemplary rationales that may support a conclusion of obviousness include:

- (a) combining prior art elements according to known methods to yield predictable results;
- (b) simple substitution of one known element for another to obtain predictable results;
- (c) use of known technique to improve similar devices (methods, or products) in the same way;
- (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (e) “obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success

(f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

As the MPEP directs, all claim limitations must be considered in view of the cited prior art in order to establish a *prima facie* case of obviousness. *See* MPEP 2143.03.

Distinctions Over JP '304

The method for crystallization of JP '304 generates terephthalic acid particles by adding a mineral acid to an aqueous solution of an alkali salt of a terephthalic acid, and the addition of the mineral acid is divided into first and second steps placed at a time interval there between. Further, JP '304 also teaches that the pH is not more than 3.0 in the second step.

On the other hand, the "method for crystallizing an organic acid" according to the present invention is a method for crystallization including the steps of:

- (i) precipitating at least a part of total of the organic acid crystals that are precipitable, by adding an acid to a solution of an organic acid salt;
- (ii) converting a part of the organic acid crystals into an organic acid salt and dissolving the organic acid salt, by adding a base to a liquid containing the organic acid crystals; and
- (iii) adding an acid to the organic acid salt dissolved liquid.

That is, the method for crystallization of JP '304 teaches adding a mineral acid to an aqueous solution of an alkali salt of a terephthalic acid. However, it is only the mineral acid that is added until the pH is not less than 3.0 in the second step, thus completely failing to teach adding a base in the process of the addition.

On the other hand, in the present invention as the acid is being dropped into a solution of an organic acid salt, the solution transits from an unsaturated state (I), in which the targeted organic acid is not yet saturated, to a supersaturated state (II), in which the targeted organic acid is not crystallized out beyond the saturation solubility of the organic acid. Then, a rapid desupersaturation (III) occurs due to the crystallization, thereby resulting in a saturated state (IV). Once the liquid arrives at the saturated state (IV), then (V) the base is added at an arbitrary point so that an amount of the acid excluding an amount being neutralized by the base returns to the point of (II), thus dissolving minute crystals (*relatively small crystals amongst the crystals being precipitated*) precipitated during the (III) and the (IV). Then, (VI) the acid is dropped again so as to cause crystal growth by using the organic acid dissolved in the liquid.

JP '304 discloses a method for crystallizing an organic acid, in which an inorganic acid is added to an alkali salt water solution of a terephthalic acid in two stages. However, JP '304 does not disclose "converting a part of organic acid crystals into an organic acid salt and dissolving the organic acid salt by adding a base to a liquid containing organic acid crystals, the liquid being obtained by adding an acid to a solution of an organic acid salt" as required by claims 14 and 23 of the present application. Similarly, claim 15 recites:

A method for crystallizing an organic acid comprising the steps of:
precipitating at least a part of total of the organic acid crystals that are precipitable, by adding an acid to a solution of an organic acid salt, so as to obtain a liquid containing the precipitated organic acid crystals;
converting a part of the precipitated organic acid crystals into an organic acid salt and dissolving the organic acid salt, by adding a base to the liquid containing the precipitated organic acid crystals; and
adding an acid to the organic acid salt dissolved liquid (emphasis added).

As is evident from the recitation, claim 15 clearly recites that addition of the base after the addition of the acid. Claims 20 and 24 contain similar limitations. In addition, JP '304 does not disclose "supplying...a base for dissolving a part of crystals precipitated by crystallization" as recited in claims 25 and 26.

In the outstanding Office Action, the Examiner alleges that “the claims are not as limited in scope as instantly set forth in the arguments. The instant claims clearly recited the addition of the acid to the solution to create the crystalline materials, not the base.” Applicants respectfully traverse since the present claims clearly recite the addition of the base after the addition of the acid as shown above.

In stark contrast, the method of JP ‘304 does not add a base once the organic acid crystals have been precipitated. Therefore, a person skilled in the art cannot easily predict an effect of obtaining large particles by dissolving the minute crystals precipitated (*relatively small crystals amongst the crystals being precipitated*) and by causing the crystal growth by using the organic acid dissolved in the liquid.

Further, the Examiner alleges that the “sole difference between the instant claims and the prior art is the amount converted to a salt.” However, JP ‘304 does not disclose dissolving a part of an acid salt that has been once precipitated.

Moreover, adding a base while crystals are being precipitated so as to convert a part of the precipitated crystals into an organic acid salt and to dissolve the organic acid salt and then dropping an acid again so as to use the dissolved organic acid salt for growing crystals was not expected. A pH rarely changes in the presence of crystals, even if the acid or base is added because, in the crystallizing method of the present invention, addition of the base only converts the organic acid into salt, thereby causing no significant change in the pH. In the neutralization crystallization in which a crystallizing reaction is carried out by adding the acid so that the pH of the reaction liquid becomes below a neutral point, controlling the above crystallizing reaction appears impossible because the pH hardly changes once the crystals are precipitated even if the base is added. Therefore, one of ordinary skill in the art could not have predicted that the above crystallizing reaction would occur by adding the base while the crystals are being precipitated.

To establish a *prima facie* case of obviousness of a claimed invention, all of the claim limitations must be disclosed by the prior art or be known in the art. As discussed above, JP ‘304 fails to disclose all of the claim limitations of independent claims 14-15, 20, and 23-26, and those claims dependent thereon. Therefore, a *prima facie* case of obviousness has not been established, and withdrawal of the outstanding rejections is respectfully requested.

For the reasons given above, JP '304 does not render the present invention obvious because the cited reference or the art as a whole does not disclose at least one feature of the present invention and its effects. Furthermore, the cited reference or the knowledge in the art provides no reason or rationale that would allow one of ordinary skill in the art to arrive at the present invention as claimed. Any contentions of the USPTO to the contrary must be reconsidered at present.

CONCLUSION

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case clearly indicating that each of claims 14-26 are allowed and patentable under the provisions of title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad M. Rink, Reg. No. 58,258 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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